

## **EXCAVATIONS, TRENCHES, AND EARTHWORK**

**1755**

(November 1991)

The state does not have to obtain a permit for excavations but must abide by CCR, Title 8, Construction Safety Orders, Article 6. Whenever the term "excavation(s)" is used it also applies to trenches, shafts, and other earthworks.

Trenches over five feet in depth require shoring. For additional shaft and incline excavation details, see CCR, Title 8, Section 1542.

For additional earthwork excavation details, see CCR, Title 8, Sections 1544 through 1547, which apply to such work locations as burrow pits, road or dam construction sites, and similar work areas.

## **PREPARATIONS**

**1755.1**

(November 1991)

Prior to opening an excavation, the supervisor must determine, to the extent possible, whether underground installations such as sewer, water, fuel, electric lines, telecommunication lines, etc., will be encountered; and, if so, where such underground installations are located.

When the excavation work approaches the approximate crossing or parallel location of an underground installation and danger of accidental contact is possible, one should determine the exact location before proceeding. When it is uncovered, provide adequate protection for the existing installation.

The supervisor must be sure that all known owners of underground facilities in the area of proposed work have been advised of the excavation at least 48 hours (excluding Saturdays, Sundays, and holidays) prior to the start of excavation work.

**EXCEPTION:** Emergency repair work to underground facilities may proceed without advance notice.

Remove or make safe all trees, boulders, poles, and other surface encumbrances creating a hazard to employees involved in excavation work before excavating begins.

## **EXPOSURE TO INJURY**

**1755.2**

(November 1991)

A qualified person must make an examination to determine that no recognizable conditions exist which would expose employees to injury from moving ground before work will be permitted in or adjacent to excavations.

A qualified person must inspect excavations after every rainstorm or other hazard-increasing occurrence and increase slide and cave-in protection, if necessary, before employees will be permitted to enter the excavation.

A qualified person is someone who, because of experience or instruction, is familiar with excavations, trenches, and earthwork, and the hazards involved. This person must have a working knowledge of the construction safety orders and shoring, sloping, and benching system protection methods.

## **SHORING, SLOPING, AND BENCHING SYSTEMS**

**1755.3**

(November 1991)

Employees who enter excavations five feet or greater in depth must be protected by a system of shoring, sloping of the ground, benching, or other alternate means as provided by CCR, Title 8, Sections 1541, 1542, 1544 and 1547.

Protection for employees who work in excavations less than five feet in depth must also be provided when examination by a qualified person indicates that hazardous ground movement may be expected.

All materials of the shoring system, in complying with the provisions of this subsection, must be free from defects and damage that might in any way impair their protective function.

Shoring systems must be able to sustain all existing and expected loads. Make special consideration for excavations adjacent to structures or improvements, or subject to vibration or ground water.

The supervisor must make provisions to prevent injury to employees installing shoring for trenches and other excavations. In trench work, the department will provide and the supervisor will require the use of devices that allow the presence of upper cross braces that have already been set in place. Follow the reverse procedure when removing shoring.

No part of the shoring system of any excavation may be removed until effective means have been taken to avoid hazards to employees from moving ground.

If depending upon a newly installed masonry or concrete wall for protection against moving ground, make sure that it has adequate strength to withstand the necessary pressures before permitting employees to enter the excavation.

In lieu of a shoring system, the sides or walls of an excavation or trench may be sloped, provided equivalent protection results. Where sloping is a substitute for shoring, the slope shall be at least 3/4 horizontal to 1 vertical unless the instability of the soil requires a flatter slope ([see Construction Safety Orders - Narrative and Graphic](#)).

## **RETAINING WALLS**

**1755.3.1**

(November 1991)

No existing wall or other structure may function as a retaining wall for an excavation until a qualified person has determined that the wall will safely withstand all expected loads which otherwise might be a hazard to workers.

Any permanent retaining wall must be able to effectively resist all existing and expected loads. Standards of design shall be comparable to those described in CCR, Title 24, or any comparable local building code of equal or greater restrictiveness.

## **WATER ACCUMULATION**

**1755.3.2**

(November 1991)

Use diversion ditches, dikes, or other means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation.

Before work progresses, control all accumulations of water in excavations which endanger stability or pose a hazard to employees.

## **VIBRATIONS OR SUPERIMPOSED LOADS**

**1755.3.3**

(November 1991)

Make special safety provisions consisting of additional bracing or other means for excavations adjacent to streets, railroads, or other sources of external vibrations or superimposed loads. Make similar provisions for excavations in areas that have been previously filled.

## **SPOIL**

**1755.4**

(November 1991)

Prevent excavated material from falling back into the area where employees are working by locating the spoil at a safe distance from the edge of the excavation. Determine the appropriate distance by considering the character of the material and the nature of the operations. Unless otherwise contained, never place the excavated material closer than two feet from the edge of excavations five feet or more in depth. For lesser depths, maintain at least a one-foot clearance.

No method that disturbs soil that is in place (such as driving stakes) may be used to contain the soil material.

Work in an excavation must at all times be under the immediate supervision of a qualified person who is authorized to modify the shoring or sloping in accordance with these orders.

## **ACCESS**

**1755.5**

(November 1991)

Always provide a convenient and safe means of access for employees to enter and leave an excavated area. This access must consist of a stairway, ladder, or ramp securely fastened in place where employees are working.

When employees are in trenches four feet or more in depth, provide a safe means of access that requires no more than 25 feet of lateral travel.

EXCEPTION: In utility trenches less than five feet in depth, earth ramps or steps are acceptable provided that they are not more than 75 feet apart.

Trenches must be crossed only where safe crossings have been provided.

When walkways or bridges cross excavated areas, they must be equipped with standard guardrails and toeboards when the depth of excavation exceeds 7 1/2 feet.

An employee working near operating excavating equipment must maintain a safe position free from the danger of falling into the machine's moving parts.

## **UNDERMINING**

(November 1991)

**1755.6**

No excavation work is permitted to take place below the base of an adjacent foundation, retaining wall, or other structure until a qualified person has determined that the excavation will not create a hazard to workers, or until taking adequate safety measures to protect workers. Undermined sidewalks and pavements must be supported to safely carry all anticipated loads.

If the stability of adjoining buildings or walls is endangered by excavations, either shoring, bracing, underpinning, or some other means of equivalent protection must be provided to ensure worker safety. A qualified person must inspect all systems daily or more often if conditions warrant.

## **OPEN EXCAVATION SAFEGUARDS**

(November 1991)

**1755.7**

Provide appropriate safeguards to prevent mobile equipment from inadvertently entering excavations, and physical barriers to prevent employees from falling into excavations. Securely barricade or cover all wells, pits, shafts, caissons, etc. Upon completion of exploration and similar operations, backfill temporary wells, pits, shafts, etc.

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